

What is Claimed is:

1 1. A digital spread spectrum frequency synthesizer, comprising:
2 a divider for receiving a reference clock with a substantially fixed period and
3 generating an output clock with a time-varying period;
4 a noise-shaped quantizer for quantizing a period control word to a time-varying
5 value in response to said output clock fed from said divider so that said divider
6 generates said output clock by means of dividing said reference clock by said
7 time-varying value;
8 means for adjusting said period control word by a period offset in response to
9 said output clock; and
10 a filter for substantially filtering out jitter from said output clock.

1 2. The digital spread spectrum frequency synthesizer as claimed in claim 1,
2 wherein said period control word has a bit resolution greater than that of said
3 time-varying value.

1 3. The digital spread spectrum frequency synthesizer as claimed in claim 1,
2 wherein said noise-shaped quantizer is a delta-sigma quantizer.

1 4. The digital spread spectrum frequency synthesizer as claimed in claim 1,
2 wherein said filter is an analog phase locked loop (PLL) device as a low pass filter for
3 removing high frequency jitter from said output clock.

1 5. The digital spread spectrum frequency synthesizer as claimed in claim 1,
2 wherein said means for adjusting said period control word comprises:

3 an offset generator for generating said period offset in response to said output
4 clock; and
5 an adder for generating said adjusted period control word by means of adding
6 said period offset to said a period nominal.

1 6. The digital spread spectrum frequency synthesizer as claimed in claim 5,
2 wherein said offset generator is an up/down counter.

1 7. A digital spread spectrum frequency synthesizer, comprising:
2 a noise-shaped quantizer for quantizing a period control word to a time-varying
3 value;
4 a divider for generating an output signal by means of dividing a reference signal
5 by said time-varying value, said output signal feeding back to said noise-shaped
6 quantizer so that said noise-shaped quantizer generates said time-varying value in
7 response to said feedback output signal; and
8 means for adjusting said period control word by a period offset in response to
9 said output clock.

1 8. The digital spread spectrum frequency synthesizer as claimed in claim 7,
2 further comprising a filter for of significantly filtering out jitter from said output
3 signal.

1 9. The digital spread spectrum frequency synthesizer as claimed in claim 7,
2 wherein said filter is an analog phase locked loop (PLL) device as a low pass filter for
3 removing high frequency jitter from said output signal.

1 10. The digital spread spectrum frequency synthesizer as claimed in claim 7,
2 wherein said reference signal is a reference clock with a substantially fixed period.

1 11. The digital spread spectrum frequency synthesizer as claimed in claim 7,
2 wherein said output signal is an output clock with a time-varying period and a
3 substantially precise long-term average frequency.

1 12. The digital spread spectrum frequency synthesizer as claimed in claim 7,
2 wherein said period control word has a bit resolution greater than that of said
3 time-varying value.

1 13. The digital spread spectrum frequency synthesizer as claimed in claim 7,
2 wherein said noise-shaped quantizer is a delta-sigma quantizer.

1 14. The digital spread spectrum frequency synthesizer as claimed in claim 7,
2 wherein said means for adjusting said period control word comprises:
3 an offset generator for generating said period offset in response to said output
4 clock; and
5 an adder for generating said adjusted period control word by means of adding
6 said period offset to said a period nominal.

1 15. The digital spread spectrum frequency synthesizer as claimed in claim 14
2 wherein said offset generator is an up/down counter.